REMARKS

Present Status of Application

The Examiner is thanked for the thorough examination of the present application. The Office Action, however, tentatively rejected all pending claims 14-20. Specifically, claims 14-20 stand rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Krivokapic et al referred as D1(US 6,512,273).

Amendments to the Claims

Independent claim 14 has been amended to more clearly identify a novel and non-obvious feature of the claimed embodiments. Specifically, claim 14 has been amended to more clearly define the feature of "double diffused sources only in said reset transistor sources to complete an asymmetrical source/drain structure." Support of the amendment can be found in page 15, line 11 to page 17, line 11 of the Specification. Accordingly, the amendment adds no new matter to the application, nor does it raise any issues under 35 U.S.C. § 112.

Rejections of claims 14-20 under 35 U.S.C. 103

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Krivokapic et al. This rejection is respectfully traversed.

Claim 14, as amended, recites:

> 14. A CMOS image sensor device comprising:
> a semiconductor substrate;
> a sensor diode in said semiconductor substrate comprising a first terminal and a second terminal;
> a plurality of gates for transistors in said CMOS image sensor wherein said gates comprise a conductor layer overlying said semiconductor substrate with an insulating layer therebetween and wherein said transistors include reset transistors;

> source/drain regions for said transistors wherein said source regions of said reset transistors are formed in said first terminals of said sensor diodes; and
>
> ***double diffused sources only in said reset transistor sources to complete an asymmetrical source/drain structure***.

(*Emphasis added.*) Applicant respectfully submits that claim 14 patently defines over the cited art for at least the reason that the cited art fails to disclose those features emphasized above.

In amended claim 14, the CMOS image sensor device comprises **double diffused sources in ONLY said reset transistor sources**, thereby forming an **asymmetrical reset transistor**. (See e.g., page 17, lines 3-11 and Figs. 5-6 of the specification.) It is important to note that the source/drain regions 139 of all other transistors 166 and 170 do not receive the DDS implantation 156 due to the blocking of the masking layer 154. This is important because **increasing the depth of the drain regions of all transistors would cause poor device performance** due to drain induced, barrier lowering (DIBL). Since the DDS **implantation 156 is selectively to only the reset transistor 166 source**, the performance of the CMOS image pixel is improved without hurting the performance of all other transistors.

The rejection of claim 14 relies on Krivokapic et al for the alleged teaching of **double diffused sources in said transistors.** Krivokapic et al, however, teach double diffused sources 24 further disclosing a novel process for masking the CMOS structure, the process producing a CMOS structure with an NMOS with improved Hot Carrier Injection (HCI) life times in CMOS devices that have spacers (AAPA also has spacers 34). (See Col. 3, lines 46-51; and Col. 4, lines 27-36 of Krivokapic et al.) The Office Action alleges that it would have been obvious to one skilled in the art **make double diffuse sources** in the structure of APPA in order to improve the performance of the device by means of improving HCI life time.

Applicant respectfully submits that Krivokapic et al do not teach or suggest the expressly-claimed features of "**double diffused sources only in said reset transistor sources to**

complete an asymmetrical source/drain structure." First, Krivokapic et al fail to teach or suggest double diffused source only in a selected transistor. (See Col. 5, lines 54-67 and Figs. 2C-2D.) Instead, in Krivokapic et al, **every transistor** is provided with double diffused sources. Second, Krivokapic et al also fail to teach or suggest the asymmetric source/drain regions of said reset transistor in the claimed embodiments. Indeed, Krivokapic et al teach forming double diffused drains as well as double diffused sources. See Figs. 2B-2D. In Krivokapic et al's CMOS device, source/drain regions of the transistors are symmetric as APPA's. Accordingly, although Krivokapic et al teach double diffused sources, the combination of APPA and Krivokapic et al would not lead one to selectively form double diffused sources only in reset transistors to complete an asymmetrical source/drain region. Therefore, there is no proper motivation and no reasonable expectation success for achieving a double diffused source only formed in said reset transistor sources as recited in amended claim 14.

MPEP 2142 reads in part:

> To establish a prima facie case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teaching. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

For at least the reasons described above, a *prima facie* case of obviousness has not been established in connection with amended claim 14. For at least the same reasons, dependent claims 15-20 patently define over the cited art as well.

NOTICE REGARDING POWER OF ATTORNEY

The undersigned previously filed a Revocation/Power of Attorney in this application, including a request to send all future correspondence to the undersigned. Notwithstanding, the PTO mailed the present Office Action to the former attorney of George O. Saile. The undersigned has re-filed the previously-filed Revocation/POA papers with this response, and hopes that the PTO will correct its records in this regard, and properly forward all future communications to the undersigned.

CONCLUSION

In view of the foregoing, it is believed that all pending claims are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

No fee is believed to be due in connection with this amendment and response to Office Action. If, however, any fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 20-0778.

Respectfully submitted,

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